



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,274	03/16/2001	Yasumi Sago	K-1968	4972

7590 03/10/2004

Manabu Kanesaka  
KANESAKA AND TAKEUCHI  
1423 Powhatan Street  
Suite 2  
Alexandria, VA 22314

EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
----------	--------------

1763

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/809,274

Applicant(s)

SAGO ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/15/03, 1/20/04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) 3,4 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,9,10 and 12-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0104.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/15/03 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "the stepped portion" in line 7. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1763

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5, and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Shunichi, JP 05-267235.

Shunichi shows the invention as claimed including a plasma-enhanced processing apparatus comprising: a process chamber 10 for processing a substrate W therein having a wall; a pumping system 52 communicating with said process chamber for exhausting gas from said process chamber; a gas introduction system 38 that introduces process gas into the process chamber; plasma-generation means that generates plasma in said process chamber by applying energy to said process gas; a substrate holder 14 that holds said substrate in said process chamber; and an opposite electrode disposed in said process chamber to face said substrate held by said substrate holder, and including a front board 12 facing the substrate holder, a clamping plate 46a disposed at a front side of the front board close to the substrate holder so that an area of the front board not covered by the clamping plate is exposed to plasma, and a main body 30 installed on the wall of the process chamber and disposed at a back side of the front board opposite to the front side, said clamping plate contacting a front surface of the front board and pressing the front board toward the main body so that a back surface of the front board is contacted and pressed uniformly onto the main body (see fig. 1 and abstract).

Regarding claims 2 and 14, note the presence of a cooling mechanism 32 that cools said front board via said main body and is capable of preventing increase of temperature of the front board in operation.

With respect to claim 5, note the presence of protector 48 covering a front surface of said clamping plate so that said front surface of the clamping plate is not exposed to said plasma.

Concerning claims 15-16, note that the opposite electrode of Shunichi further includes an insulation casing 48 disposed around the main body, and said clamping plate is fixed to the insulation casing at a stepped portion and includes a screw 34 for fixing a clamping plate to the insulation casing

With respect to claim 17, note that the insulation casing also includes a L-shaped protector covering the screw and at least a part of the clamping plate.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-7, 9-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shunichi, JP 05-267235 in view of Lilleland et al., U.S. Patent 6,073,577.

Shunichi is applied as above but fails to expressly disclose a protector for the clamping plate flush with the front board, a sheet made of carbon inserted between the front board and the main body, and wherein said clamping plate is screwed on a member except said front board. Lilleland et al. discloses an elastomeric joint composed of a polymer (which includes carbon) between a support frame and a silicon showerhead electrode (see abstract). Furthermore, Lilleland et al. also includes a plasma confinement ring 17 which is flush with the front board of the upper electrode (see col. 4-line 49 to col. 8-line 18) and discloses screwing plates together using the plasma confinement ring so as not to screw into the front board (see fig. 1). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Shunichi so as to form the protector or plasma confinement ring flush with the front board as taught by Lilleland et al. because this would do a better job of limiting the plasma damage to the upper electrode. Additionally, it also would have been obvious to one of ordinary skill in the art

at the time the invention was made to modify the apparatus of Shunichi so as to include an elastomeric joint between the front board and the main body as suggested by Lilleland et al. because this allows movement between the front board and the main body in order to account for thermal expansion during processing (see abstract, lines 9-13). Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Shunichi so as to screw the clamping plate by not screwing the front board because such an arrangement will not interfere with either the RF operation or the gas flow of the front board.

Moreover, the configuration of the claimed protector is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed protector is significant (see *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)).

With respect to claim 7, note that the front board in Shunichi is made of single crystal silicon (see abstract).


Regarding the claimed screwing torque of claim 9, the claims of the instant application are directed to the apparatus and since an apparatus is being claimed as the instant invention, the method of how the apparatus is manufactured is not considered to be the matter at hand. The apparatus of Shunichi can be manufactured in a variety of ways to form the apparatus as shown in the Figures and text.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

March 4, 2004